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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,843	10/29/2003	Jimmy D. Collins	FSI0052/US/2	7839

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EXAMINER	
LEE, HSIEN MING	

ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 08/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/695,843	COLLINS ET AL.
	Examiner	Art Unit
	Hsien-ming Lee	2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 24-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 and 24-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

HSIEN-MING LEE
PRIMARY EXAMINER

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-8 and 24-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Mekias (US 2003/0075555, submitted by the applicant).

In re claim 1, Mekias, in Fig. 1~4 and related text, teach a spin-coating system (paragraph [0023]) comprising a supply of process solution in fluid 12 (paragraph [0029]) communication with a dispenser 30 (Fig.2) through a dispense line 6 (paragraph [0029]), and a pressure sensor 44 (Fig.4 and paragraphs [0023] and [0035]) that measures pressure of the process solution in the dispense line 6 at a time related to a step of dispensing the process solution, to control timing of a subsequent spin-coating process step.

In re claim 2, Mekias teaches that the pressure sensor comprises a pressure transducer (paragraph [0023]).

In re claim 3, Mekias, in Fig.3, teach that a dispense valve 22 is between the supply of process solution and the dispenser 30, and the pressure sensor 44 is between the dispense valve 22 and the dispenser 30.

In re claim 4, Mekias inherently teach that the pressure sensor 44 detects a beginning or end of process solution being dispensed from the dispenser 30.

In re claim 5, Mekias teaches comprising a control system (i.e. a high-precision electronic feedback control system (paragraph [0021]) for controlling a spin coating process, wherein the pressure sensor 44 detects a beginning or end of process solution being dispensed from the dispenser 30 and the pressure sensor send a signal to the control system at a detected beginning or at a detected end of the process solution dispense (paragraph [0022]).

In re claims 6 and 8, Mekias teaches that the solution is a photoresist solution (paragraph [0025]), and the pressure sensor signals the control system at a detected end of the process solution dispense.

In re claim 7, Mekias teaches that the solution is a developer solution (paragraph [0025]), and the control pressure sensor 44 signals the control system at a detected end of the developer solution dispense.

In re claims 24-25, Mekias also expressly and inherently teaches a spin-coating system comprising a supply of process solution in fluid 12 communication with a dispenser 30 through a dispense line 6 and a pressure sensor 44 that measures pressure of the process solution to detect an equipment malfunction in the apparatus, such as pressure variation result from the equipment malfunction, such as variabilities in chamber volume (paragraph [0023]).

In re claim 26, Mekias also inherently teaches that the system detects a malfunction by measuring pressure of process solution via the pressure sensor 44 in the dispense line 6 during dispense of the process solution.

In re claim 27, Mekias teaches that the solution is a photoresist solution (paragraph [0025]).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeSimone et al .(US 6,383,289) in view of Hayes et al. (US 6,494,953).

In re claim 9, DeSimone et al. teach a spin-coating system comprising:

- a turntable 13 to support and rotate a substrate 12(Fig.1);
- a dispenser 17 positioning above the substrate 12;
- a supply of process solution in fluid communication with the dispenser 17 through a dispense line 31 (Fig.1);
- a pressure sensor 50 that measures pressure of the process solution; and
- a process control system (i.e. a controller, col. 6, lines 24-25) that controls application of the process solution to the substrate 12, the process control system being programmed to interrupt serial control to execute a process command.

DeSimone et al. is silent as to the dispenser being moveable between a dispensing position and a non-dispensing position.

Hayes et al., in an analogous art, teach using a dispenser comprising a dispensing nozzle 76 and a dispensing line 14 (Fig.3), which is moveable between a dispensing position (i.e. the position above the substrate 15) and a non-dispensing position (i.e. the position above the solvent bath 18), wherein the dispenser is rinsed in the solvent bath 18 (Fig.1 and col. 3, lines 46-49).

Therefore, it would have been obvious to one of the ordinary skill in the art, at the time of the invention was made, to combine DeSimone et al. with Hayes et al. so that the dispenser can be used for spin coating at the dispensing position and be rinsed or cleaned at the non-dispensing position (col. 3, lines 46-49, Hayes et al.).

In re claim 10, DeSimone et al. teach that the system comprises a dispense valve 32 between the supply of process solution and the dispenser 17, the pressure sensor 50 measures pressure of the process solution in the disperse line, the pressure sensor 50 is between the dispense valve and the dispenser 17.

In re claims 11 and 15, DeSimone et al. teach that the solution is a photoresist solution (col. 4, line 32).

In re claim 12, DeSimonde et al. inherently teach that the pressure sensor 50 sends a signal to the control system (i.e. a controller, col. 6, lines 24-25) at the beginning or at the end of dispense of the process solution, and the control system interrupts control of process (col.3, lines 25-34).

In re claim 13, DeSimonde et al. also teach the claimed limitations, as stated in the rejection against claims 11 and 12.

In re claim 14, the teachings of DeSimonde et al. is illustrative rather than restricted to the photoresist solution (col. 4, lines 28-38 and col. 6, lines 35-36). One of the ordinary skill in the art would have been motivated to apply the teachings of DeSimonde et al. to spin-coat a developer solution for a expectation of success, i.e. using the pressure sensor 50 of DeSimonde et al. capable of sending a signal to the controller at the start of the developer solution dispense.

Response to Arguments

5. Applicant's arguments filed 6/20/2005 have been considered but are moot in view of the new ground(s) of rejection.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsien-ming Lee whose telephone number is 571-272-1863. The examiner can normally be reached on Tuesday-Thursday (7:30 ~ 6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hsien-ming Lee
Primary Examiner
Art Unit 2823

August 24, 2005

HSIEN-MING LEE
PRIMARY EXAMINER

8/24/05